



United States
Department of
Agriculture

Lat 40.60026 Lon -121.43499

Forest
Service

Lassen
National
Forest

55 So. Sacramento St.
Susanville, CA 96130
(530) 257-2151 Voice
(530) 257-6244 TTY
(530) 252-6428 Fax

File Code: 3420

Date: April 26,1999

Route To: 2430

Subject: Disease Evaluation of Stand 181, Prospect Compartment, (Evaluation # NE99-2)

To: District Ranger, Hat Creek RD

On April 21, Scott Stawiarski and I visited Stand 181 in the Prospect Compartment (SE 1/4, Section 29, T32N R5E) to determine if a small area of dead and down ponderosa pine trees in the stand resulted from root disease. Scott is preparing a detailed silvicultural prescription for Stand 181 to use for his silviculturist certification. No root disease was found. Elytroderma disease was diagnosed as the cause of much of the needle and branch dieback in the stand.

Stand 181 is almost all mature second growth ponderosa pine with a small component of white fir saplings. Most of the pine range from 10"-26" in DBH and 70'-100' in height. A few old pine with DBH's up to 36" are scattered through the stand. The average basal area of this stand is 240 square feet which is 102% of normal, based on Meyer's stocking guide. Most of the large overstory ponderosa pine were harvested around 30 years ago and the stand was precommercially thinned from below with chainsaws since then.

We first examined an area of pine mortality which was approximately 1/4 acre in size. Here, approximately twenty 12"-20" (DBH) trees had died, rotted at the base and fallen. A few live pine trees with healthy crowns remained within the perimeter of the mortality. Much of the bark had separated from the dead trees. Scott had identified western pine beetle galleries on some of the dead trees. In the residual stand, many of the intermediate and suppressed pine trees had a large number of recently killed branches in their lower crowns which suggested root disease might be present. I could not find conks of the root disease fungus, Heterobasidion annosum, in three large old stumps nor at the base of a 12" DBH pine which had a poor live crown ratio. Also, I could not find evidence of black stain root disease in two suppressed pine trees, in one small dead tree, nor in a fading 12" DBH pine which had many bark beetle pitch

Unsupported Graphic Version: 311!

Caring for the Land and Serving People

Printed on Recycled Paper

Unsupported Graphic Version: 311!

tubes on the lower eight feet of the bole. Since the area of mortality had healthy mature pine trees surviving and no recently killed pine trees nor trees with fading crowns, I conclude that root disease is not active in this clump. The observed mortality probably occurred early this decade during a prolonged dry period, when the overstocked pine trees were stressed and subsequently attacked and killed by bark beetles. The abundance of dead branches in the lower crowns of many of the trees in Stand 181 were probably the result of elytroderma infections and not root disease.

A short distance from the clump of mortality, many branches in the lower crowns of a few ponderosa pine trees showed a reddening of most 1-year-old needles. I cut into several infected twigs and found necrotic flecks in the inner bark. Some of the infected branches exhibited early signs of brooming. From these symptoms, I diagnosed elytroderma disease caused by the fungus Elytroderma deformans. Under favorable site and weather conditions this endemic disease infects the needles of host trees and subsequently can infect branches. Pine stands in areas of high relative humidity (eg. around lakes and streams) are most susceptible to elytroderma infections. The proximity to Hat Creek, the topography of the area and the recent long and wet springs have apparently been favorable for this pathogen. Three miles SW of stand 181, many ponderosa and Jeffrey pine along Lost Creek have been heavily infected by elytroderma in recent years. (Refer to FPM Evaluation #NE98-9 for a report on the Lost Creek elytroderma disease outbreak.)

In Stand 181, as in other areas on Lassen NF where elytroderma disease has been recently active, most of the elytroderma infections have occurred low in the canopy. High relative humidity and free moisture on the needles in the lower canopy appears to be favorable for the fungus to infect most of the branches. Shade may have contributed to the observed high mortality of infected branches in the lower canopy. Dominant trees are least affected since their crowns are often above the height where infections seem to regularly occur. Intermediate and suppressed trees, on the other hand, have had a large proportion of their live crowns killed by the disease. Although elytroderma disease kills mature trees infrequently, moderate to severe infection reduces growth and vigor and thus predisposes the host to bark beetle attack. Elytroderma infection may have contributed to the observed mortality in Stand 181.

In thinning this stand, the intermediate and suppressed trees with poor crown ratios should be favored for removal as well as trees with elytroderma infecting over 40% of their crowns. These are the trees that can be most impacted by elytroderma disease in the future. If you have further questions or if you would like more assistance in developing marking guidelines for this area, please contact me by e-mail (wwoodruf) or phone (252-6680).

BILL WOODRUFF
Plant Pathologist
FPM, Northeast California Service Area

